

CLAIMS

What is claimed is:

1. In a cellulosic product having a polymer coating applied thereto which
5 imparts barrier properties, the improvement which comprises:
said polymer coating comprising an ethylene-vinyl acetate polymer comprised of
crystalline ethylene segments prepared by emulsion polymerizing ethylene and vinyl
acetate in the presence of a stabilizing system consisting essentially of a surfactant or a
protective colloid in combination with a surfactant, said ethylene-vinyl acetate polymer
10 having:
 - (a) a crystalline melting point ranging from 35 to 110 °C measured at a heat
rate of 20 °C per minute; and,
 - (b) a tensile storage modulus of at least 1×10^5 dynes/cm² at a temperature
of 115 °C and measured at 6.28 rad/sec.
- 15 2. The cellulosic product of claim 1 wherein the polymer is comprised of from
15 to 90% by weight of polymerized units of vinyl acetate and from about 10 to 85% by
weight of polymerized units of ethylene based upon the total weight of the polymer.
- 20 3. The cellulosic product of claim 2 wherein the polymer is comprised of from
25 to 80% by weight of polymerized units of vinyl acetate and from about 20 to 75% by
weight of polymerized units of ethylene based upon the total weight of the polymer.
- 25 4. The cellulosic product of claim 2 wherein the polymer is comprised of from
35 to 75% by weight of polymerized units of vinyl acetate and from about 25 to 65% by
weight of polymerized units of ethylene based upon the total weight of the polymer.
- 30 5. The cellulosic product of claim 4 wherein the polymer is comprised of from
30 to 50% by weight of polymerized units of vinyl acetate and from about 50 to 70% by
weight of polymerized units of ethylene based upon the total weight of the polymer

6. The cellulosic product of claim 2 wherein polymerized units of a carboxylic acid or N-methylol acrylamide are present in said polymer in an amount from about 0.2 to about 10% by weight of said polymer.

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7. The cellulosic product of claim 3 wherein said polymer has a tensile storage modulus of at least 2×10^5 dynes/cm² at 115 °C measured at 6.28 rad/sec.

8. The cellulosic product of claim 7 wherein the polymer consists essentially 10 of polymerized units of ethylene, vinyl acetate, and acrylic acid.

9. The cellulosic product of claim 8 wherein the crystalline heat of fusion of said polymer is from about 5 to 100 joules per gram as measured at a heat rate of 20 °C per minute.

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10. The cellulosic product of claim 9 wherein the glass transition temperature is from +25 °C to about -40 °C as measured at a heat rate of 20 °C per minute.

11. The cellulosic product of claim 10 wherein crystalline thermal melting point 20 ranges from 50 to 90 °C as measured at a heat rate of 20 °C per minute.

12. The cellulosic product of claim 8 wherein the T_g of the polymer is from - 25 to -35 °C.

25 13. The cellulosic product of claim 12 wherein the crystalline heat of fusion ranges from preferably 15 to 70 joules per gram as measured at a heat rate of 20 °C per minute.

14. In a paper or paperboard product having a polymer coating applied thereto which imparts barrier properties, said polymer coating comprising a polymer emulsion, the improvement which comprises:

the polymer coating comprising a polymer consisting essentially of polymerized 5 units of ethylene, vinyl acetate, and a carboxylic acid or N-methylol acrylamide and containing crystalline ethylene segments, said polymer prepared by emulsion polymerizing ethylene, vinyl acetate and a carboxylic acid or N-methylol acrylamide in the presence of a stabilizing system consisting essentially of a surfactant or a protective colloid in combination with a surfactant, said ethylene-vinyl acetate polymer having:

10 (a) a crystalline melting point ranging from 50 to 90 °C measured at a heat rate of 20 °C per minute; and,

(b) a tensile storage modulus of at least 1×10^5 dynes/cm² at a temperature of 115 °C and measured at 6.28 rad/sec.

15 15. The paper or paperboard product of Claim 14 wherein the T_g of the polymer ranges from -25 to -35 °C.

16. The paper or paperboard product of claim 15 wherein the heat of fusion of said polymer is from 10 to 70 joules per gram as measured at a heat rate of 20 °C per 20 minute.

17. The paper or paperboard product of claim 16 wherein the polymer has from 35 to 75 weight percent vinyl acetate, 25 to 65 weight percent ethylene, and from 0.2 to 10 percent by weight a carboxylic acid or N-methylol acrylamide, based on the 25 total weight of the polymer.

18. The paper or paperboard product of claim 16 wherein the polymer consists essentially of ethylene, vinyl acetate, and acrylic acid.